

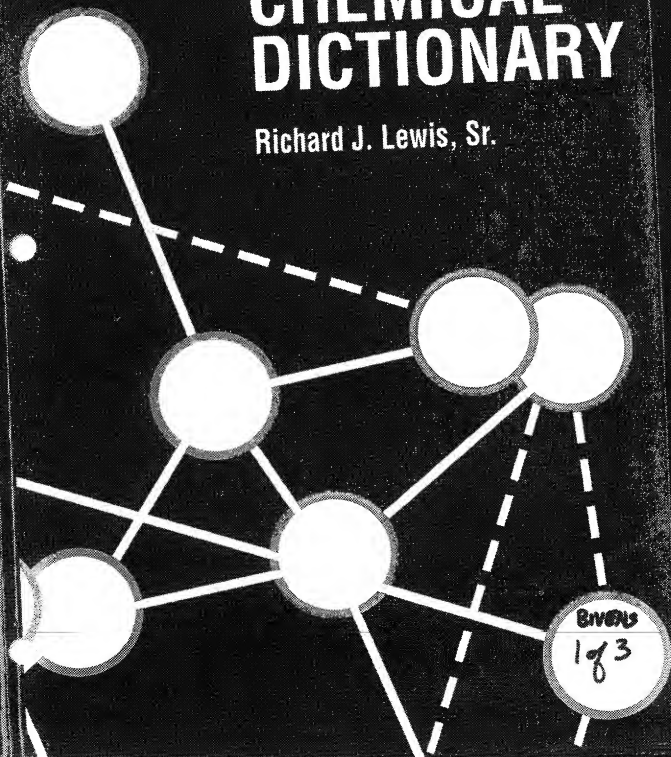
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*Hawley's*

Twelfth Edition

# CONDENSED CHEMICAL DICTIONARY

Richard J. Lewis, Sr.



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BIVENS  
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283

acteristics of the reactor nearly constant during use.

**burnt lime.** See calcium oxide.

**burnt sienna.** See iron oxide red.

**burnt umber.** See umber.

**"Buromin" [Calgon].** TM for sodium hexametaphosphate in glass plate form for boiler water conditioning.

**"Burosil" [Calgon].** TM for a granular, alkaline, phosphate-silicate compound used in boiler-water conditioning to precipitate calcium and magnesium as loose sludge.

**burr mill.** See attrition mill.

**bushy stunt virus.** A viral protein present in tomato-plant infections.

Properties: Mw 7,600,000, pH 4.1.  
See virus.

**"Butacite" [Du Pont].** TM for polyvinyl butyral resin, available as soft pliable sheeting in 750-ft rolls 10-84 inches wide.  
See polyvinyl acetal resins.

**1,3-butadiene.** (vinylethylene; erythrene; divinyl; divinyl). CAS: 106-99-0.  $\text{H}_2\text{C}=\text{CH}:\text{CH}=\text{CH}_2$ . 37th highest-volume chemical produced in U.S. (1991)



Properties: Colorless gas with mild aromatic odor, easily liquefied, bp  $-4.41^\circ\text{C}$ , d 0.6211 (liquid at  $20^\circ\text{C}$ ), fp  $-108.9^\circ\text{C}$ , flash p  $-105^\circ\text{F}$  ( $-76^\circ\text{C}$ ), specific volume 6.9 cu ft/lb (700F), autoignition temperature 780F (414C), vap press 17.65 psia ( $0^\circ\text{C}$ ). Soluble in alcohol and ether, insoluble in water. The material polymerizes readily, particularly if oxygen is present, and the commercial material contains an inhibitor to prevent spontaneous polymerization during shipment or storage.

Derivation: (1) Catalytic dehydrogenation of butenes or butane; (2) oxidative dehydrogenation of butenes.

Method of purification: Extractive distillation in the presence of furfural, absorption in aqueous cuprous ammonium acetate, or use of acetonitrile.

Grade: Technical (98.0%), CP (99.0%), instrument (99.4%), research (99.8%).

Hazard: Irritant in high concentration. TLV: 10

ppm in air. A suspected human carcinogen. Highly flammable gas or liquid, explosive limits in air 2-11%. May form explosive peroxides on exposure to air. Must be kept inhibited during storage and shipment. Inhibitors often used are di-n-butylamine or phenyl- $\beta$ -naphthylamine. Storage is usually under pressure or in insulated tanks  $<35^\circ\text{F}$  ( $1.67^\circ\text{C}$ ).

Use: Synthetic elastomers (styrene-butadiene, polybutadiene, neoprene, nitriles), ABS resins, chemical intermediate.

**butadiene-acrylonitrile copolymer.**

See nitrile rubber.

**butadiyne.** See diacetylene.

**butaldehyde.** See butyraldehyde.

**butanal.** See butyraldehyde.

**butane.** (n-butane). CAS: 106-97-8.



Properties: Colorless gas, natural-gas odor, extremely stable, has no corrosive action on metals, does not react with moisture, very soluble in water, soluble in alcohol and chloroform, bp  $-0.5^\circ\text{C}$ , fp  $-138.3^\circ\text{C}$ , condensing pressure approximately 30 lb at  $32.5^\circ\text{C}$ , d (liquid at  $0^\circ\text{C}$ ) 0.599, d (vapor at  $0^\circ\text{C}$ ; air = 1) 2.07, critical temperature  $153.2^\circ\text{C}$ , critical pressure (absolute) 525 psi, heating value (25C) 3266 Btu/cu ft, specific volume (21.1C), 6.4 cu ft/lb, flash p  $-76^\circ\text{F}$  ( $-60^\circ\text{C}$ ), autoignition temperature 761F ( $405^\circ\text{C}$ ). An asphyxiant gas.

Derivation: A by-product in petroleum refining or gasoline manufacture.

Grade: Research 99.99 mole %, pure 99 mole %, technical 95 mole %, also available in various mixtures with isobutane, propane, pentanes, etc.

Hazard: Highly flammable, dangerous fire and explosion risk. Explosive limits in air 1.9 to 8.5%. TLV: 800 ppm in air. Narcotic in high concentration.

Use: Organic synthesis, raw material for synthetic rubber and high-octane liquid fuels, fuel for household and for many industrial purposes, manufacture of ethylene, solvent, refrigerant, standby and enricher gas, propellant in aerosols, pure grades used in calibrating instruments, food additive.

Note: Butane in liquid form may be stored both above and below ground. Besides storage in liquefied form under its vapor pressure at normal atmospheric temperatures, refrigerated liquid storage at atmospheric pressure may be used. Such systems are closed and insulated, and the liquid petroleum gas vapor is circulated through pumps and compressors to serve as the refrigerant.

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343